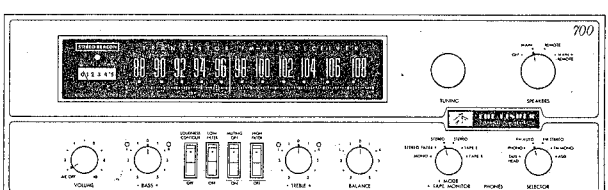
Service Manual

Original

THE FISHER®



700-T

CHASSIS SERIAL NUMBERS BEGINNING 10001

PRICE $1.00

FISHER RADIO CORPORATION · LONG ISLAND CITY 1 · NEW YORK

Original

CAUTION: This is a FISHER precision high-fidelity instrument. It should be serviced only by qualified personnel — trained in the repair of transistor equipment and printed circuitry.

TEST EQUIPMENT REQUIRED

The following are needed to completely test and align modern high-fidelity instruments such as amplifiers, tuners and receivers.

- Vacuum-Tube Voltohmmeter (100-mV DC scale)
- Audio Vacuum-Tube Voltmeter (10-mV AC scale)
- Oscilloscope (Flat to 100 kHz Minimum)
- Audio (Sine-Wave) Generator
- Intermodulation Distortion Analyzer
- Harmonic Distortion Analyzer
- AM/FM Signal Generator
- Multiplex Generator (preferably with RF output — FISHER Model 300 or equal)
- 10.7-MHz Sweep Generator
- 455-kHz Sweep Generator
- Line Voltage Autotransformer or Voltage Regulator
- 2 — Load Resistors, 4 or 8 Ohm, 50 Watt
- 2 — Full Range Speakers for Listening Tests
- Stereo Source — Turntable or Tape Recorder for Listening Tests
- Soldering Iron with Small Tip Fully Insulated from Power Line
- Suction Desoldering Tool

PRECAUTIONS

Many of these items are included just as a reminder — they are normal procedures for experienced technicians. Shortcuts can be taken but often they cause additional damage — to transistors, circuit components or the printed-circuit board.

Soldering—A well-tinned, hot, clean soldering iron tip will make it easier to solder without damage to the printed-circuit board or the many circuit components mounted on it. It is not the wattage of the iron that counts — it is the heat available at the tip. Some 50-watt irons reach temperatures of 1,000° F — others will hardly melt solder. Small-diameter tips should be used for single solder connections — larger pyramid and chisel tips are needed for larger areas.

• When removing defective resistors, capacitors, etc., the leads should be cut as close to the body of the circuit component as possible. (If the part is not being returned for in-warranty factory replacement it may be cut in half — with diagonal-cutting pliers — to make removal easier.)

• Special de-soldering tips are made for unsoldering multiple-terminal units like IF transformers and electrolytic capacitors. By unsoldering all terminals at the same time the part can be removed with little chance of breaking the printed-circuit board.

• Always disconnect the chassis from the power line when soldering. Turning the power switch OFF is not enough. Power-line leakage paths, through the heating element, can destroy transistors.

Transistors—Never attempt to do any work on the transistor amplifiers without first disconnecting the AC linecord and waiting until the power supply filter-capacitors have discharged.

• Guard against shorts — it takes only an instant for a base-to-collector short to destroy that transistor and possibly others direct-coupled to it. [In the time it takes for a dropped machine screw, washer or even the screwdriver, to glance off a pair of socket terminals (or between a terminal and the chassis) a transistor can be ruined.]

• DO NOT bias the base of any transistor to, or near, the same voltage applied to its collector.

• DO NOT use an ohmmeter for testing transistors. The voltage applied through the test probes may be higher than the base-emitter breakdown voltage of the transistor.

Output Stage and Driver — Replacements for output and driver transistors, if necessary, must be made from the same beta group as the original type. The beta group is indicated by a colored dot on the mounting flange of the transistor. Be sure to include this information, when ordering replacement transistors.

• If one output transistor burns out (open or shorts), always remove ALL output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All output transistors in one channel will be destroyed if the base-biasing circuit is open on the emitter end.

• **When mounting a replacement power transistor be sure the bottom of the flange, the mica insulator and the surface of the heat sink are free of foreign matter.** Dust and grit can prevent perfect contact reducing heat transfer to the heat sink. Metallic particles can puncture the insulator and cause shorts — ruining the transistor.

• **Silicone grease must be used between the transistor and the mica insulator and between the mica and the heat sink for best heat conduction.** (Use Dow-Corning DC-3 or C20194 or equivalent compounds made for power transistor heat conduction.)

• Use care when making connections to speakers and output terminals. Any frayed wire ends can cause shorts that may burn out the output transistors — they are direct-coupled to the speakers. To reduce the possibility of shorts at the speakers, lugs should be used on the exposed ends or at least the ends of the stranded wires should be tinned to prevent frayed wire ends. The current in the speakers and output circuitry is quite high. Poor contacts or small size wire can cause power losses in the speaker system. Use 14 or 16 AWG for long runs of speaker wiring.

Voltage Measurements—Voltage measurements are made with the line voltage adjusted to 117 volts and all readings are ± 10%. All voltages are DC, measured with a VTVM to ground, with no signal input unless otherwise noted. ▭ indicates 1-kHz audio voltages, measured with an audio AC VTVM to ground at various points from the phono input to the power amplifier output.

Alignment Procedures — Replacement of transistors and components in the front end, IF amplifier and multiplex decoder will normally not require realignment of these circuits. Realignment of these circuits, unless absolutely necessary, is not recommended. Do not attempt a realignment unless the required test equipment is available and the alignment procedure is thoroughly understood.

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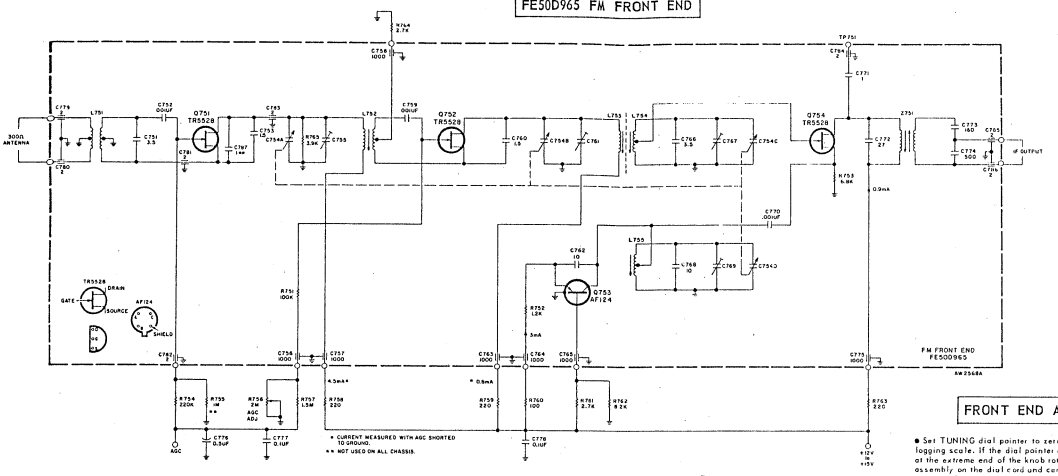
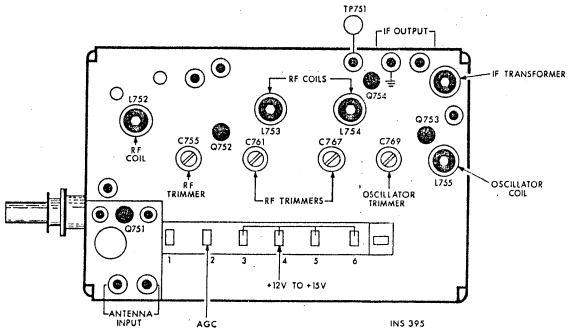
FE50D965 FM FRONT END



PARTS DESCRIPTION LIST

Symbol	Description	Part No.
C776	Electrolytic, 0.5uF, 70V	C50483-11
C777, 778	Ceramic, 0.1uF, +80–20%, 12V	C50331-6
R754	Composition, 220K, 10%, ½W	RC20BF224K
R755	*Dep. Carbon, 1M, 5%, 1/8W	R12DC105J
R756	Pot., 2M, 30%, AGC Adjust	R50150-73
R757	Dep. Carbon, 1.5M, 5%, 1/3W	R33DC155J
R758, 759	Dep. Carbon, 220, 5%, 1/8W	R12DC221J
R760	Dep. Carbon, 100, 5%, 1/8W	R12DC101J
R761	Dep. Carbon, 2.7K, 5%, 1/8W	R12DC272J
R762	Dep. Carbon, 8.2K, 5%, 1/8W	R12DC822J
R763	Dep. Carbon, 220, 5%, 1/8W	R12DC221J

* Not used on all chassis.



FRONT END ALIGNMENT

- Set TUNING dial pointer to zero (0) calibration mark on the logging scale. If the dial pointer does not coincide with the 0 at the extreme end of the knob rotation, reposition the pointer assembly on the dial cord and cement the pointer in place to prevent slippage.
- Connect DC VTVM to TP301 on the IF board.
- Connect an RF generator to the NORM antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator—see Figure 1.
- Set RF generator frequency and TUNING dial pointer to 90 MHz (Mc). DO NOT USE MODULATION (AM or FM) and keep the generator output as low as possible during the alignment procedure.
- Align oscillator coil (L755) core first—then align the RF coils (L754, L753, L752) for maximum reading on DC VTVM.
- Set RF generator frequency and TUNING dial pointer to 106 MHz (Mc).
- Adjust oscillator trimmer (C769) first—then adjust the RF trimmers (C767, C761, C755) for maximum reading on DC VTVM.
- Repeat alignment several times until accurate dial calibration and maximum gain are observed. Keep the generator output as low as possible during all adjustments.
- Adjust RF generator for input of 200 mV, with no modulation, at NORM antenna terminals. Use speakers or headphones to monitor the output.
- Turn up VOLUME control until noise is heard in the output. Adjust RF generator for input of 1 mV; gradually increase generator output to 200 mV. There should be no audible increase in the noise level. If necessary, readjust slightly AGC Adjust Pot. R756 for no increase in noise as the generator is varied from 1 mV to 200 mV.

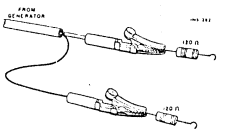
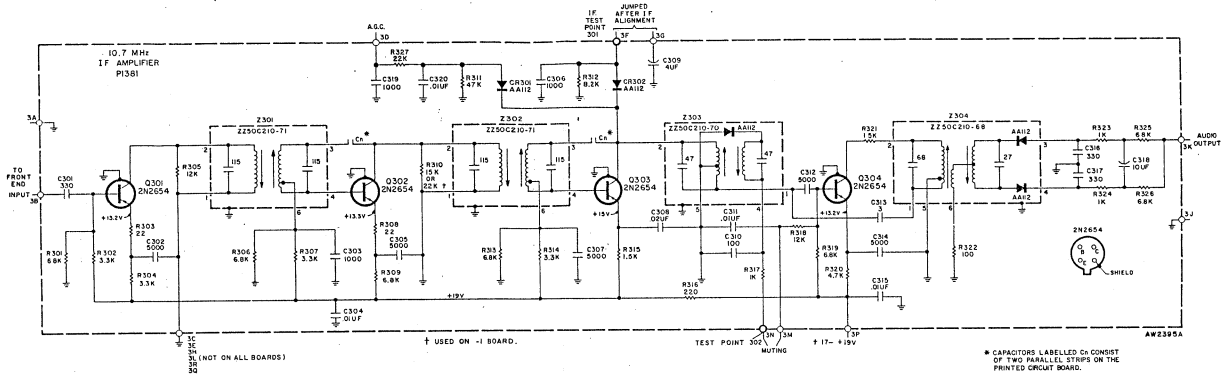


Figure 1. Generator connections to antenna terminals.

1381-1 10.7 MHz IF AMPLIFIER



PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C301	Ceramic, 330pF, 10%, 1000V	C50B569-1
C302	Ceramic, 5000pF, 20%, 500V	C50B567-2
C303	Ceramic, 1000pF, 10%, 1000V	C50B569-3
C304	Ceramic, .01uF, +80-20%, 500V	C50B570-1
C305	Ceramic, 5000pF, 20%, 500V	C50B567-2
C306	Ceramic, 1000pF, 10%, 1000V	C50B569-4
C307	Ceramic, 5000pF, 20%, 500V	C50B567-2
C308	Ceramic, .02uF, +80-20%, 100V	C50B570-2
C309	Electrolytic, 4uF, 35V	C50483-1
C310	Ceramic, 100pF, 10%, N1500, 1000V	C50B568-3
C311	Ceramic, .01uF, +80-20%, 500V	C50B570-1
C312	Ceramic, 5000pF, 20%, 500V	C50B567-2
C313	Ceramic, 3pF, 10%, NPO, 1000V	C50070-28
C314	Ceramic, 5000pF, 20%, 500V	C50B567-2
C315	Ceramic, .01uF +80-20%, 500V	C50B570-1
C316, 317	Ceramic, 330pF, 10%, 1000V	C50B569-1
C318	Electrolytic, 10uF, 35V	C50483-2
C319	Ceramic, 1000pF, 20%, 1000V	C50B569-4
C320	Ceramic, .01uF, +80-20%, 500V*	C50B570-1

RESISTORS

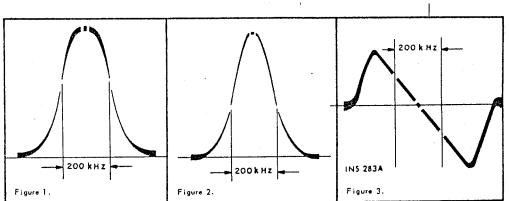
Deposited carbon in ohms, 5% tolerance, 1/8 watt, unless otherwise noted. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R301	6.8K	R12DC682J
R302	3.3K	R12DC332J
R303	22	R12DC220
R304	3.3K	R12DC332J
R305	12K	R12DC123J
R306	6.8K	R12DC682J
R307	3.3K	R12DC332J
R308	22	R12DC220J
R309	6.8K	R12DC682J
R310	15K	R12DC153J
	22K	R12DC223J
R311	47K	R12DC473J
R312	8.2K	R12DC822J
R313	6.8K	R12DC682J
R314	3.3K	R12DC332J
R315	1.5K	R12DC152J
R316	220	R12DC221J
R317	1K	R12DC102J
R318	12K	R12DC123J
R319	6.8K	R12DC682J
R320	4.7K	R12DC472J
R321	1.5K	R12DC152J
R322	100	R12DC101J
R323, 324	1K	R12DC102J
R325, 326	6.8K	R12DC682J
R327	22K	R12DC223J

MISCELLANEOUS

Symbol	Description	Part No.
CR301, 302	Diode, AA112	V50260-16
Z301, 302	Transformer, I. F.	ZZ50C210-71
Z303	Coil, Limiter	ZZ50C210-70
Z304	Transformer, Ratio Detector	ZZ50C210-68
Q301, 302, 303, 304	Transistor 2N2654	TR2N2654
	Transistor Mtg. Pads	A50618

*Used on -1 board.



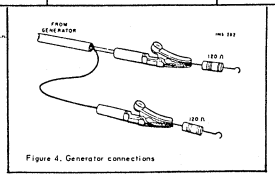
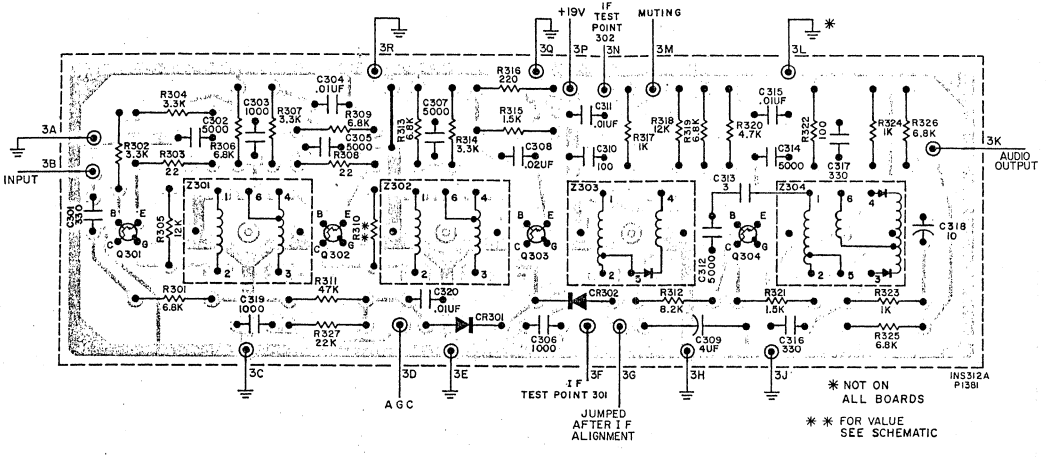


Figure 4. Generator connections

1381-1 10.7 MHz IF AMPLIFIER

BOARD VIEWED FROM COMPONENT SIDE



IF ALIGNMENT

- Connect 10.7-MHz (Mc) sweep generator to TP751 on front end. Disconnect jumper between terminals 3F and 3G on IF board. Connect scope vertical input through 220K resistor to TP301.

NOTE: Connect ground lead of generator to ground near TP751 and ground of scope closest to scope input.

- Adjust generator output voltage and frequency to observe IF response curve. Use as low a generator output as possible. Measure voltage at TP301 with DC VTVM during alignment and readjust generator output to keep meter reading from −1.4 to −2.0 VDC maximum.
- Detune top core of Z303 outwards.
- Align bottom core of Z303, top and bottom cores of Z302, Z301 and Z751 for maximum gain and symmetry—see Figure 1. Repeat alignment.
- Reconnect jumper between terminals 3F and 3G. Disconnect wire from TP302 (terminal 3N) and connect scope vertical input through 220K resistor to TP302.
- Align top core of Z303 for maximum gain and symmetry—see Figure 2.
- Disconnect scope and reconnect wire to TP302. Connect DC VTVM to TP302.
- Set generator output to 10.7 MHz (Mc) with no sweep. Vary generator voltage from minimum to maximum; reading on DC VTVM should increase with increase in signal.
- Connect DC VTVM across resistor R4. Vary generator voltage from minimum to maximum; reading on DC VTVM should decrease with increase in signal.
- Set generator voltage to 200mV. Adjust Meter Adjust Pot, R14 for tuning meter reading of 4.
- Connect scope vertical input through 220K resistor to terminal 3K.
- Set generator for sweep and adjust generator output voltage to observe ratio detector response. Use as low a generator output as possible.
- Adjust top and bottom cores of Z304 for maximum gain; readjust top core for best linearity—see Figure 3.

FM TUNING METER CALIBRATION

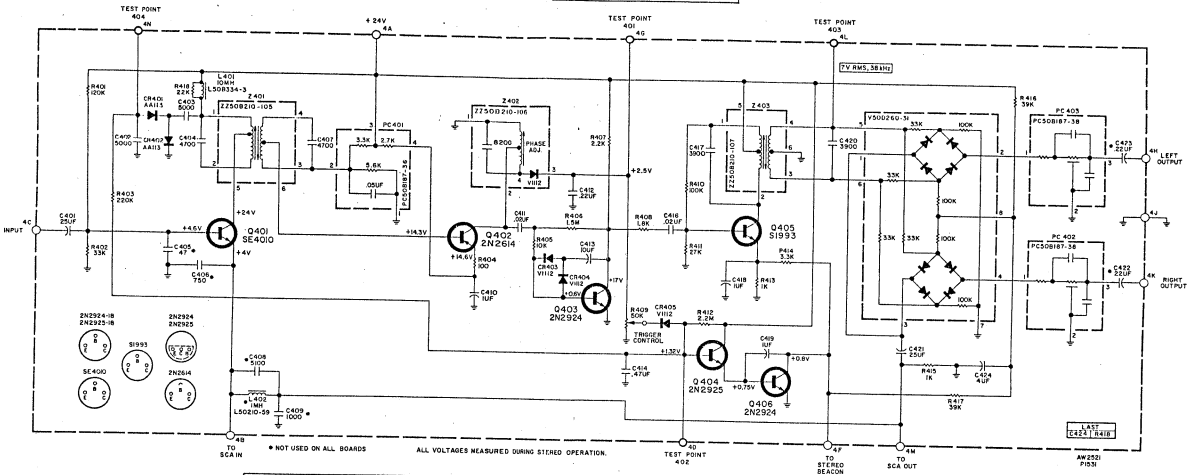
- Connect an FM generator to the NORM antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator.
- Set FM generator frequency and TUNING dial pointer to 90 MHz (Mc). Set generator output to 20 mV, ±22.5 kHz (kc) deviation with 400 Hz (cps).
- Adjust top core of Z303 for maximum reading on tuning meter.
- Increase generator output to 200 mV. Adjust Meter Adjust Pot, R14 for meter reading of 4.5.

FM MUTING ADJUSTMENT

Set MUTING switch to OFF.

- Connect an FM generator to the NORM antenna terminals. Use a 120-ohm composition resistor in series with each lead from the generator.
- Connect AC VTVM to LEFT or RIGHT CHANNEL RCDR HIGH jack.
- Set FM generator frequency and TUNING dial pointer to 90 MHz (Mc). Set generator output to 20 uV, ±22.5 kHz (kc) deviation with 400 Hz (cps).
- Adjust TUNING knob for maximum reading on tuning meter. Note reading on AC VTVM.
- Set MUTING switch to ON. Adjust Muting Adjust Pot. R16 for reading on AC VTVM 1 to 5 db lower than that previously noted.
- Reduce generator voltage to zero—no signal (400 Hz modulation) or noise should be indicated on AC VTVM at RCDR HIGH jack.

1531 MULTIPLEX DECODER



PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C401	Electrolytic, 25uF, 15V	C50B637-6
C402, 403	Ceramic, 5000pF, 20%, 500V	C50B567-2
C404	Polystyrene, 4700pF, 5%, 33V	C50B636-22
C405	Ceramic, 47pF, 10%, N330, 1000V	C50B568-20
C406	Ceramic, 750pF, 10%, 1000V	C50B567-6
C407	Polystyrene, 4700pF, 5%, 33V	C50B636-23
C408	Polystyrene, 5100pF, 5%, 33V	C50B636-27
C409	Ceramic, 1000pF, 10%, 1000V	C50B569-3
C410	Electrolytic, 1uF, 70V	C50B637-2
C411	Ceramic, .02uF, +80-20%, 100V	C50B570-2
C412	Mylar, .22uF, 10%, 100V	C50B638-16
C413	Electrolytic, 10uF, 25V	C50B637-4
C414	Mylar, .47uF, 10%, 100V	C50B638-17
C415	-Deleted-	---
C416	Ceramic, .02uF, +80-20%, 100V	C50B570-2
C417	Silver Mica, 3900pF, 5%, 100V	C50B571-1
C418	Electrolytic, 1uF, 70V	C50B637-2
C419	Tant. Electrolytic, 1uF, 20%, 25V	C50C640-1
C420	Silver Mica, 3900pF, 5%, 100V	C50B571-1
C421	Electrolytic, 25uF, 15V	C50B637-6
C422, 423	Tant. Electrolytic, .22uF, 20%, 25V	C50C640-6
C424	Electrolytic, 4uF, 35V	C50483-1

RESISTORS

Composition in ohms, 10% tolerance, ½-watt unless otherwise noted. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R401	120K	RC20BF124K
R402	33K	RC20BF333K
R403	220K	RC20BF224K
R404	100	RC20BF101K
R405	10K	RC20BF103K
R406	1.5M	RC20BF155K
R407	2.2K	RC20BF222K
R408	1.8K	RC20BF182K
R409	Pot., 50K, 30%, Trigger Control	R50150-64
R410	100K	RC20BF104K
R411	27K	RC20BF273K
R412	2.2M	RC20BF225K
R413	1K	RC20BF102K
R414	3.3K	RC20BF332K
R415	1K	RC20BF102K
R416, 417	Dep. Carbon, 39K, 5%, 1/8W	R12DC393J

MISCELLANEOUS

Symbol	Description	Part No.
CR401, 402	Diode, AA113	V50260-22
CR403-405	Diode, 1112	V1112
L401	Coil, MPX Filter Choke, 10mH	L50B334-3
L402	Choke, SCA Filter	L50210-59
PC401	Printed Circuit	PC50B187-36
PC402, 403	Printed Circuit	PC50B187-38
Q401	Transistor, 4010	TR4010-2
Q402	Transistor, 2N2614	TR2N2614
Q403	Transistor, 2N2924	TR2N2924-18
Q404	Transistor, 2N2925	TR2N2925-18
Q405	Transistor, S1993	TR1993-2
Q406	Transistor, 2N2924	TR2N2924
Z401	Transformer, 19kHz	ZZ50B210-105
Z402	Coil, 10kHz	ZZ50B210-106
Z403	Transformer, 38kHz	ZZ50B210-107
---	Dual Chopper	V50D260-31

MULTIPLEX ALIGNMENT

Two methods of aligning the multiplex decoder are given. The preferred procedure uses a multiplex generator with RF and 19 kHz outputs and with 1 kHz modulation, such as the Fisher Model 300 Multiplex Generator. This is the better method of alignment since the front end and IF stages are also checked through the use of this procedure. An alternate procedure for use with multiplex generators not having an RF output is also given.

PREFERRED ALIGNMENT PROCEDURE

Set MUTING switch to OFF and SELECTOR switch to FM AUTO.

- Connect MPX generator to the LOC antenna terminals. Use two 120-ohm composition resistors in series with the generator leads.
- Follow procedures given in Table 1 below.

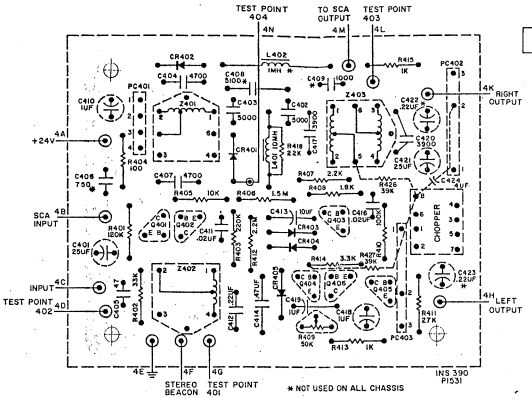
NOTE: Check the alignment of the IF amplifier before aligning the MPX decoder. Poor IF alignment can make proper multiplex adjustment impossible.

ALTERNATE ALIGNMENT PROCEDURE

Set MUTING switch to OFF and SELECTOR switch to FM AUTO.

- Disconnect wire going to connection 4C on the multiplex board. Connect MPX generator to connection 4C.
- Follow procedures given in Table 2 below.
- After alignment is complete, disconnect MPX generator and reconnect lead coming from connection 3K on the IF board to connection 4C on the multiplex board.

1531 MULTIPLEX DECODER



BOARD VIEWED FROM COMPONENT SIDE

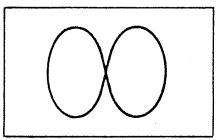


FIGURE 1. Lissajous pattern for MPX alignment.

TABLE 1

MULTIPLEX ALIGNMENT USING RF MULTIPLEX SIGNAL

STEP	GENERATOR MODULATION	RF DEV.	INDICATOR TYPE AND CONNECTION	ALIGNMENT	
				ADJUST	INDICATION
1	19kHz(kc) pilot only.	±7.5kHz (kc)	DC VTVM to TP401	Z401 top & bottom, Z402	Maximum DC VTVM reading.
2	Short connection 4F to ground.	–	–	–	Stereo Beacon should light.
3	Connect portion of 19kHz (kc) generator output to scope horizontal input.	no mod.	Scope vertical input through 1 megohm resistor to TP403; scope set for external sweep.	Z403 top	Stable Lissajous pattern 2:1 (Figure 1) as slow moving as possible.
4	Same as Step 3.	no mod.	Same as Step 3	Z403 bottom	Maximum scope amplitude; adjust Z403 top as necessary for slowest moving Lissajous.
5	Disconnect connection 4F from ground.	–	–	–	–
6	Composite MPX signal 1kHz (kc) on left channel only.	±75kHz (kc)	Audio (AC) VTVM and scope input to left channel output on preamp board.	Z402	Maximum audio AC VTVM reading; clean 1kHz (kc) sine wave on scope.
7	Composite MPX signal 1kHz (kc) on right channel only.	±75kHz (kc)	Same as Step 6.	Separation Control*	Minimum audio AC VTVM reading–at least 30 db below reading in Step 6.
8	Same as Step 7.	±75kHz (kc)	Audio (AC) VTVM and scope input to right channel output on preamp board.	–	Same audio AC VTVM reading as obtained in Step 6 (±2 db); clean 1kHz (kc) sine wave on scope.
9	Same as Step 6.	±75kHz	Same as Step 8.	–	Minimum audio AC VTVM reading–at least 30 db below reading in Step 8.
10	19kHz (kc) pilot only.	±3.5kHz (kc)	DC VTVM to connection 4F.	Trigger Control	Stereo Beacon lights up with 0.8 V reading on DC VTVM.

* NOTE: Separation Control is located on preamplifier board.

TABLE 2

MULTIPLEX ALIGNMENT USING COMPOSITE MULTIPLEX SIGNAL

STEP	GENERATOR MODULATION	LEVEL (RMS)	INDICATOR TYPE AND CONNECTION	ALIGNMENT	
				ADJUST	INDICATION
1	19kHz (kc) pilot only.	Vary 0 to 50mV	DC VTVM to TP401	Z401 top & bottom, Z402	Maximum DC VTVM reading.
2	Short connection 4F to ground.	–	–	–	Stereo Beacon should light.
3	Connect portion of 19kHz (kc) generator output to scope horizontal input.	Vary 0 to 50mV	Scope vertical input through 1 megohm resistor to TP403; scope set for external sweep.	Z403 top	Stable Lissajous pattern 2:1 (Figure 1) as slow moving as possible.
4	Same as Step 3.	Vary 0 to 50mV	Same as Step 3.	Z403 bottom	Maximum scope amplitude; adjust Z403 top as necessary for slowest moving Lissajous.
5	Disconnect connection 4F from ground.	–	–	–	–
6	Composite MPX signal 1kHz (kc) on left channel only.	100mV (560mV P-P)	Audio (AC) VTVM and scope input to left channel output on preamp board.	Z402	Maximum audio AC VTVM reading; clean 1kHz (kc) sine wave on scope.
7	Composite MPX signal 1kHz (kc) on right channel only.	100mV (560mV P-P)	Same as Step 6.	Separation Control*	Minimum audio AC VTVM reading at least 30 db below reading in Step 6.
8	Same as Step 7.	100mV (560mV P-P)	Audio (AC) VTVM and scope input to right channel output on preamp board.	–	Same audio AC VTVM reading as obtained in Step 6 (±2 db); clean 1kHz (kc) sine wave on scope.
9	Same as Step 6.	100mV (560mV P-P)	Same as Step 8.	–	Minimum audio AC VTVM reading–at least 30 db below reading in Step 8.
10	19kHz (kc) pilot only.	Vary 0 to 50mV	DC VTVM to connection 4F.	Trigger Control	Stereo Beacon lights up with 0.8 V reading on DC VTVM.

* NOTE: Separation Control is located on preamplifier board.

(2-11-131-1)

PT278-2 AUDIO CONTROL AMPLIFIER

PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C201, 202, 203, 204, 205, 206	Electrolytic, 1uF, 70V	C50B637-2
C207, 208	Ceramic, 680pF, 10%, 1000V	C50B569-2
C209, 210	Mylar, .33uF, 10%, 250V	C50B638-10
C211, 212, 213, 214	*Tant. Electrolytic, 1uF, 20%, 25V	C50C640-1
C215, 216	**Mylar, .047uF, 10%, 250V	C50B638-5

RESISTORS

Deposited carbon in ohms, 5% tolerance, 1/8-watt, unless otherwise noted, K=Kilohms, M=Megohms.

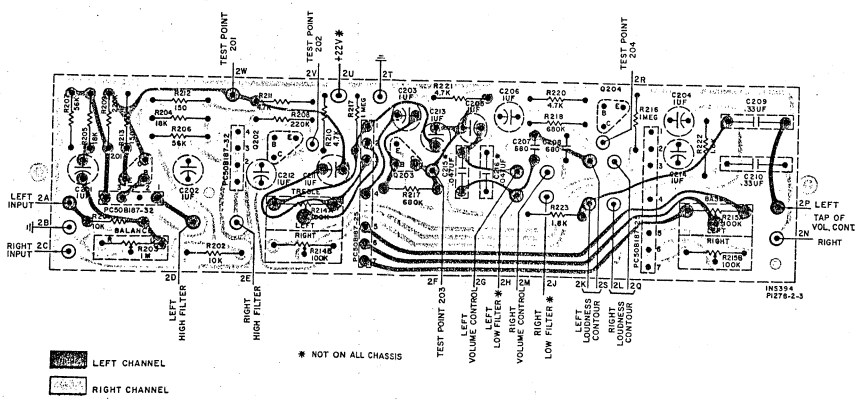
Symbol	Description	Part No.
R201, 202	10K	R12DC103J
R203	Potentiometer, 250K, Balance	R50160-182BXA
R204, 205	18K	R12DC183J
R206, 207	56K	R12DC563J
R208, 209	220K	R12DC224J
R210, 211	Composition, 4.7K, 10%, ½W	RC20BF472K
R212, 213	150	R12DC151J
R214, 215	Potentiometer, 100K, Treble, Bass	R50160-183-1
R216, 217	Composition, 1M, 10%, ¼W	RC07BF105K
R218, 219	680K	R12DC684J
R220, 221	Composition, 4.7K, 10%, ½W	RC20BF472K
R222, 223	Composition, 1.8K, 10%, ½W	RC20BF182K

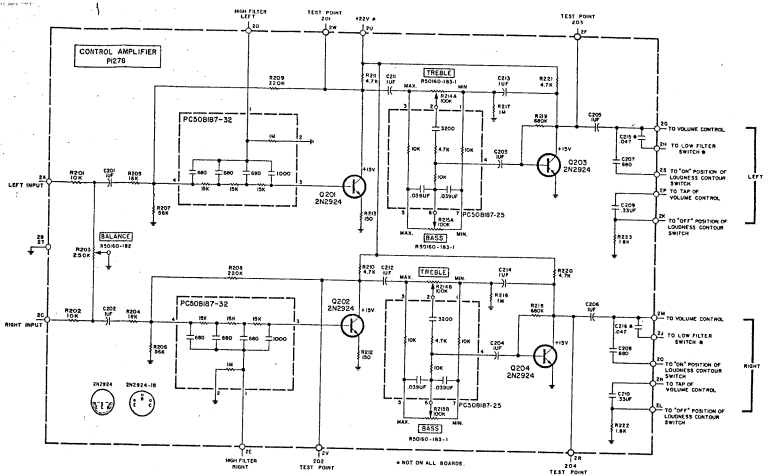
MISCELLANEOUS

Symbols	Description	Part No.
Q201, 202, 203, 204	Transistor, 2N2924	TR2N2924-18
---	Printed Circuit, High Filter	PC50B187-32
---	Printed Circuit, Tone Control	PC50B187-25

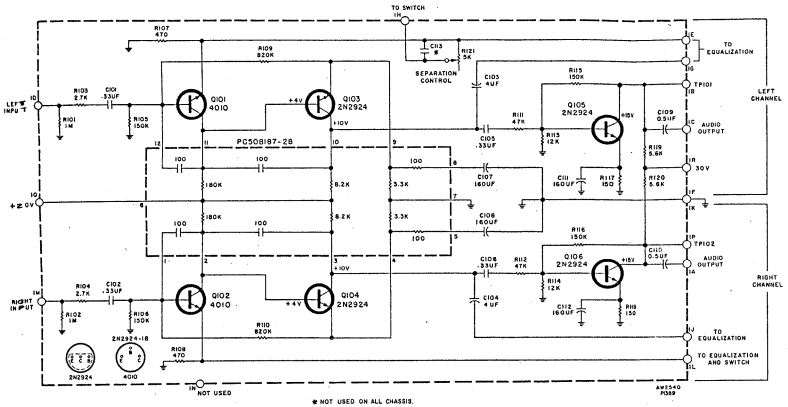
* Used on some boards.
** Used on -2 board.

BOARD VIEWED FROM COMPONENT SIDE



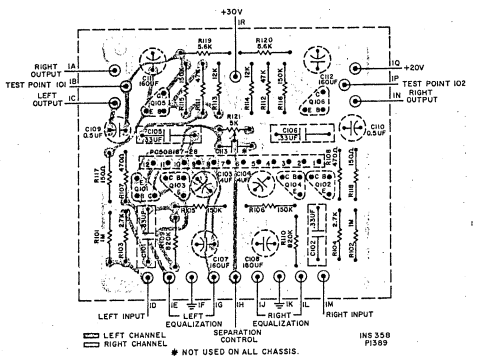


1389 PREAMPLIFIER



* NOT USED ON ALL CHASSIS.

BOARD VIEWED FROM COMPONENT SIDE



* NOT USED ON ALL CHASSIS.

PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C101, 102	Mylar, 0.33uF, 10%, 250V	C50B638-10
C103, 104	Electrolytic, 4uF, 35V	C50B637-1
C105, 106	Mylar, 0.33uF, 10%, 250V	C50B638-10
C107, 108	Electrolytic, 160uF, 6V	C50B637-3
C109, 110	Electrolytic, 0.5uF, 70V	C50B637-5
C111, 112	Electrolytic, 160uF, 6V	C50B637-3

RESISTORS

Deposited carbon in ohms, 5% tolerance, 1/8-watt, unless otherwise noted. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R101, 102	1M	R12DC105J
R103, 104	2.7K	R12DC272J
R105, 106	150K	R12DC154J
R107, 108	470	R12DC471J
R109, 110	820K	R12DC824J
R111, 112	47K	R12DC473J
R113, 114	12K	R12DC123J
R115, 116	150K	R12DC154J
R117, 118	150	R12DC151J
R119, 120	5.6K	R12DC562J
R121	Pot., 5K, 30%, Separation Control	R50150-62

MISCELLANEOUS

Symbol	Description	Part No.
Q101, 102	Transistor, SE4010	TR4010-2
Q103, 104, 105, 106	Transistor, 2N2924	TR2N2924-18

1489-3 DRIVER

PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C851, 852	Electrolytic, 25uF, 15V	C50B637-6
C853	Electrolytic, 200uF, 35V	C50483-7

RESISTORS

Deposited carbon in ohms, 5% tolerance, ½ watt, unless otherwise noted, K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R851	15K	R50DC153J
R852	8.2K	R50DC822J
R853	Composition, 3.9K	RC20BF392J
R854	56K	R50DC563J
R855	220	R50DC221J
R856	Composition, 82	RC20BF820J
R857	Pot., 300, 20%, Center Voltage Adjust	R50B499-1
R858	Pot., 300, 20%, Output Bias Adjust	R50B499-1
R859	2.2K	R50DC222J
R860	3.3K	R50DC332J
R861	Composition, 82	RC20BF820J
R862	56K	R50DC563J
R863	Composition, 120	RC20BF121J
R864	Composition, 82	RC20BF820J

MISCELLANEOUS

Symbol	Description	Part No.
CR851	Diode, Silicon	SID50894
CR852, 853	Diode, Zener, 6.8V, 5%, 1W	ZR50921-2
CR854, 855	Diode, Silicon	SID50894
Q851, 852	Transistor, TR1005	TR1005
Q853	Transistor, TR1004	TR1004

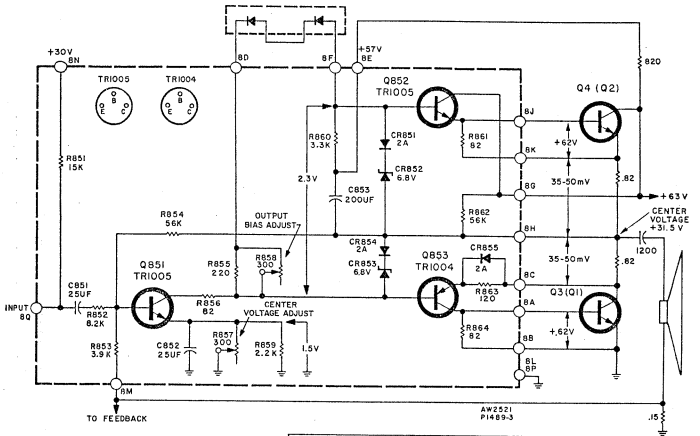
POWER AMPLIFIER CENTER VOLTAGE ADJUSTMENT

- Connect two 10K, ±1% resistors in series across capacitor C19 (2500uF). Connect the common lead of a DC VTVM to the junction of the two resistors.
- Connect DC VTVM to the junction of resistors R37 and R39. Adjust Center Voltage Adjust Pot. R857 on left channel driver board for meter reading of 0 ±0.5 VDC.
- Connect DC VTVM to the junction of resistors R38 and R40. Adjust Center Voltage Adjust Pot. R857 on right channel driver board for meter reading of 0 ±0.5 VDC.
- Disconnect 10K resistors.

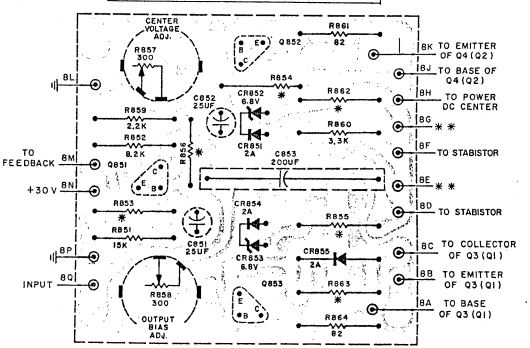
POWER AMPLIFIER IDLING CURRENT ADJUSTMENT

NOTE: This adjustment is to be performed only after completing Center Voltage Adjustment.

- Connect DC VTVM across resistor R37. Adjust Output Bias Adjust Pot. R858 on left channel driver board for meter reading of 40 ±10mV DC.
- Connect DC VTVM across resistor R38. Adjust Output Bias Adjust Pot. R858 on right channel driver board for meter reading of 40 ±10mV DC.



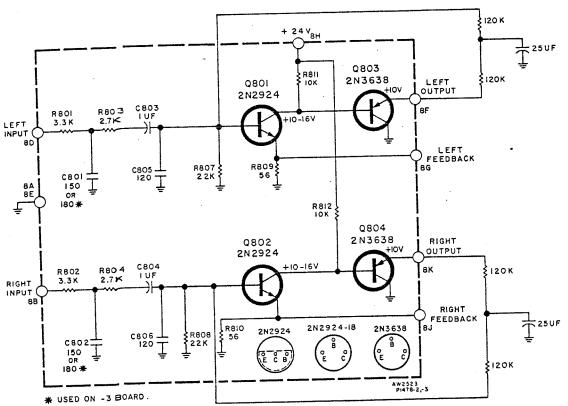
BOARD VIEWED FROM COMPONENT SIDE



* FOR VALUE SEE PARTS LIST

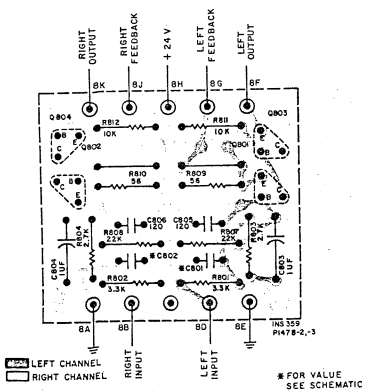
** SEE SCHEMATIC

1478-3 PREDRIVER



* USED ON -3 BOARD.

BOARD VIEWED FROM COMPONENT SIDE



PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C801, 802	*Ceramic, 150pF, 10%, 1000V	C50B569-9
	**Ceramic, 180pF, 10%, 1000V	C50B569-14
C803, 804	Tant. Electrolytic, 1uF, 20%, 25V	C50B640-1
C805, 806	Ceramic, 120pF, 10%, 1000V	C50B569-16

RESISTORS

Deposited carbon in ohms, 5% tolerance, 1/8-watt, unless otherwise noted. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R801, 802	3.3K	R12DC332J
R803, 804	2.7K	R12DC272J
R805, 806	120K	R12DC224J
R807, 808	22K	R12DC223J
R809, 810	56	R12DC560J
R811, 812	10K	R12DC103J

MISCELLANEOUS

Symbol	Description	Part No.
Q801, 802	Transistor, 2N2924	TR2N2924
Q803, 804	Transistor, 2N3638A	TR2N3638A-3

*Used on -1, -2 boards.
**Used on -3 board.
†Used on -1 board.

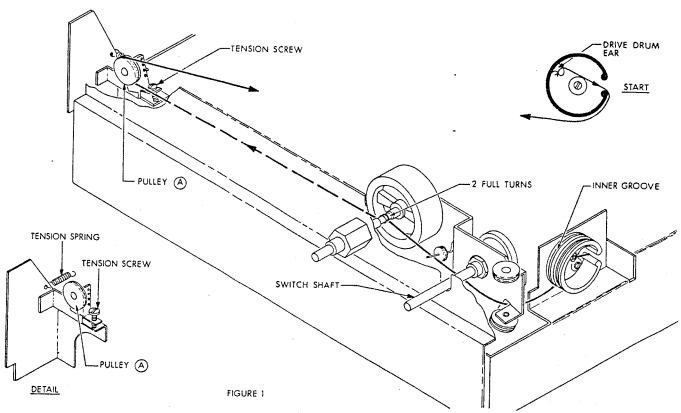


FIGURE 1

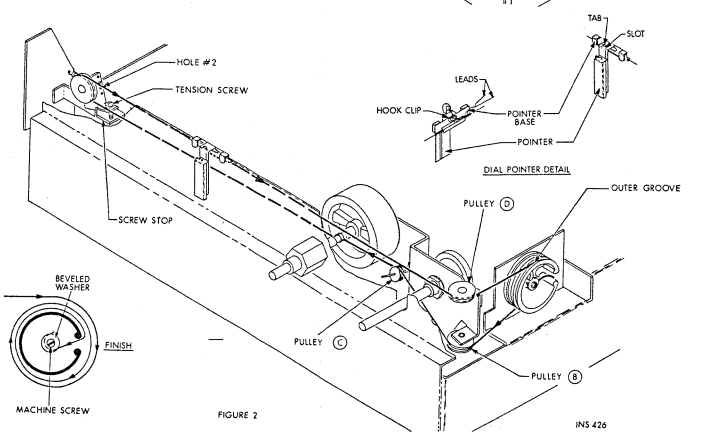
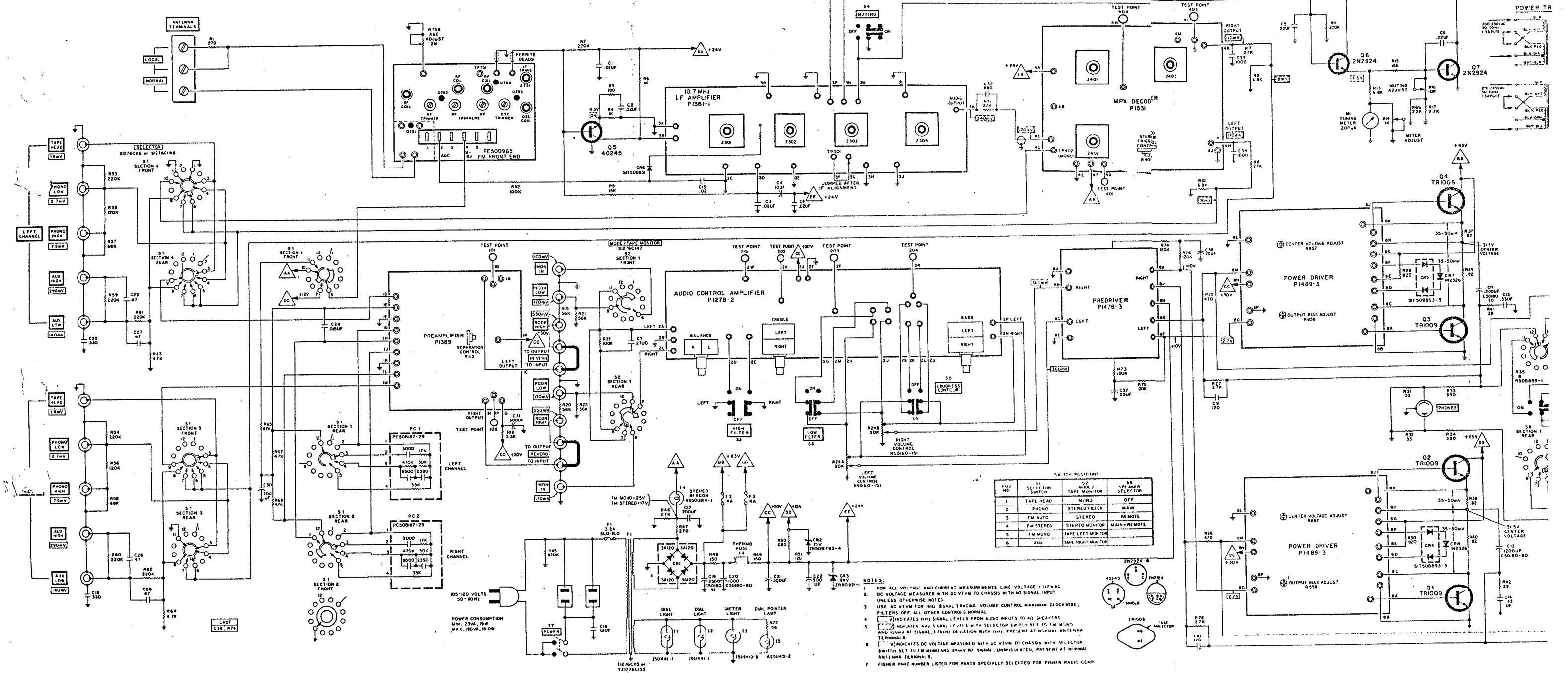


FIGURE 2

INS 426

MAIN CHASSIS



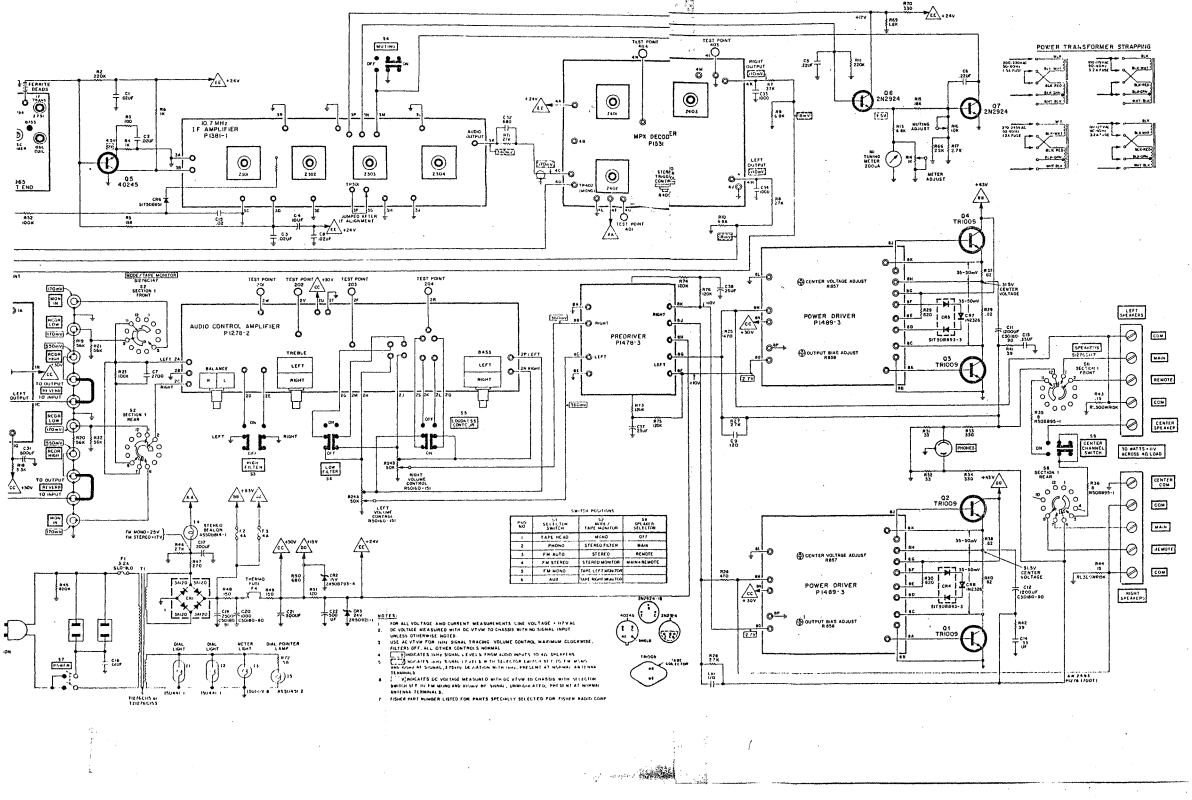
ANTENNA TERMINALS
LOCAL
NORMAL
FE50D965 FM FRONT END
R756 AGC ADJUST 2M
10.7 MHz IF AMPLIFIER P1381-1
MPX DECODER P1531
S4 MUTING
Q5 40245
Q6 2N2924
Q7 2N2924
M1 TUNING METER 200μA
MUTING ADJUST
METER ADJUST
POWER TR
SELECTOR S1276C116 or S1276C146
LEFT CHANNEL
TAPE HEAD
PHONO LOW
PHONO HIGH
AUX HIGH
AUX LOW
PREAMPLIFIER P1389
SEPARATION CONTROL R113
MODE / TAPE MONITOR S1276C147
AUDIO CONTROL AMPLIFIER P1278-2
BALANCE
TREBLE
BASS
S5 LOUDNESS CONTOUR
HIGH FILTER S3
LOW FILTER S6
RIGHT VOLUME CONTROL R50160-151
LEFT VOLUME CONTROL R50160-151
PREDRIVER P1478-3
POWER DRIVER P1489-3
CENTER VOLTAGE ADJUST R857
OUTPUT BIAS ADJUST R858
Q4 TR1005
Q3 TR1009
Q2 TR1009
Q1 TR1009
31.5V CENTER VOLTAGE
PHONES
PC1 PC50B187-29
PC2 PC50B187-29
LEFT CHANNEL
RIGHT CHANNEL
STEREO BEACON A550814-1
FM MONO • 25V
FM STEREO • 17V
F1 3.2A SLO-BLO
T1
THERMO FUSE F4
105-120 VOLTS 50-60Hz
POWER CONSUMPTION MIN: 23VA, 19W MAX. 190VA, 18 OW
S7 POWER
DIAL LIGHT
DIAL LIGHT
METER LIGHT
DIAL POINTER LAMP
T1276C115 or T21276C153
LAST C38 R76

SWITCH POSITIONS

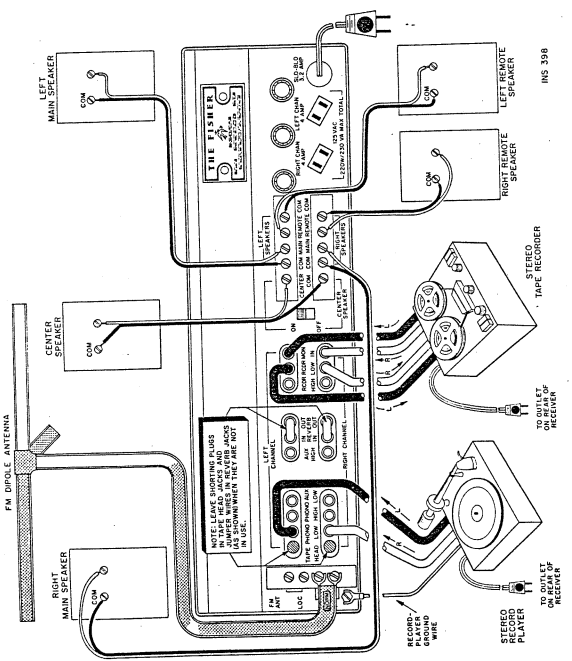
POS NO	S1 SELECTOR SWITCH	S7 MODE / TAPE MONITOR	S8 SPEAKER SELECTOR
1	TAPE HEAD	MONO	OFF
2	PHONO	STEREO FILTER	MAIN
3	FM AUTO	STEREO	REMOTE
4	FM STEREO	STEREO MONITOR	MAIN + REMOTE
5	FM MONO	TAPE LEFT MONITOR	
6	AUX	TAPE RIGHT MONITOR	

NOTES:

1. FOR ALL VOLTAGE AND CURRENT MEASUREMENTS LINE VOLTAGE = 117 VAC
2. DC VOLTAGE MEASURED WITH DC VTVM TO CHASSIS WITH NO SIGNAL INPUT UNLESS OTHERWISE NOTED.
3. USE AC VTVM FOR 1kHz SIGNAL TRACING. VOLUME CONTROL MAXIMUM CLOCKWISE, FILTERS OFF, ALL OTHER CONTROLS NORMAL
4. [V] INDICATES 1kHz SIGNAL LEVELS FROM AUDIO INPUTS TO 4Ω SPEAKERS
5. [ ] INDICATES 1kHz SIGNAL LEVELS WITH SELECTOR SWITCH SET TO FM MONO AND 100mV RF SIGNAL, 75kHz DEVIATION WITH 1kHz, PRESENT AT NORMAL ANTENNA TERMINALS.
6. [V] INDICATES DC VOLTAGE MEASURED WITH DC VTVM TO CHASSIS WITH SELECTOR SWITCH SET TO FM MONO AND 100mV RF SIGNAL, UNMODULATED, PRESENT AT NORMAL ANTENNA TERMINALS.
7. FISHER PART NUMBER LISTED FOR PARTS SPECIALLY SELECTED FOR FISHER RADIO CORP

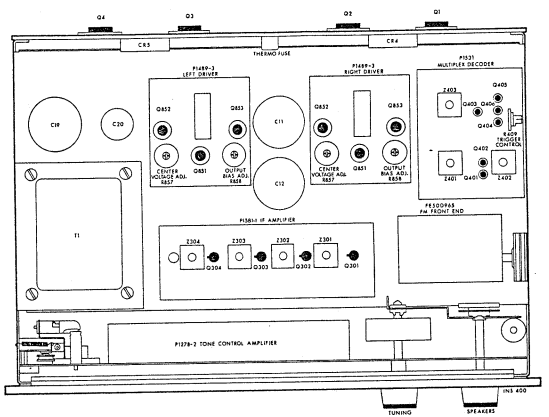

POWER TRANSFORMER STRAPPING
10.7 MHz IF AMPLIFIER P1581-1
MPX DECODER P1531
AUDIO CONTROL AMPLIFIER P1270-2
PRECORRIER P1476-3
POWER DRIVER P1489-3
POWER DRIVER P1489-3
Q5 40245
Q6 2N2924
Q7 2N2924
Q4 TRIODS
Q3 TRIODS
Q2 TRIODS
Q1 TRIODS
TREBLE
BASS
BALANCE
LEFT
RIGHT
CENTER VOLTAGE ADJUST R857
OUTPUT BIAS ADJUST R858
METER ADJUST
MUTING ADJUST
SPEAKERS
CENTER SPEAKER
NOTES:
1. FOR ALL VOLTAGE AND CURRENT MEASUREMENTS, LINE VOLTAGE = 117 V AC.
2. DC VOLTAGE MEASURED WITH DC VTVM TO CHASSIS WITH NO SIGNAL INPUT UNLESS OTHERWISE NOTED.
3. USE AC VTVM FOR 10Hz SIGNAL TRACING. VOLUME CONTROL MAXIMUM CLOCKWISE, FILTERS OFF, ALL OTHER CONTROLS NORMAL.
4. INDICATES 10Hz SIGNAL, 0.5 V RMS FROM AUDIO INPUTS TO ALL SPEAKERS.
5. INDICATES 10Hz SIGNAL, 1.7 V RMS FROM TAPE OUTPUT TO ALL SPEAKERS.
6. INDICATES DC VOLTAGE MEASURED WITH DC VTVM TO CHASSIS WITH SELECTOR SWITCH SET TO FM MONO AND NO SIGNAL. (MEASURED AT THE POINT AT WHICH ANTENNA TERMINAL IS CONNECTED.)
7. FISHER PART NUMBER LISTED FOR PARTS SPECIALLY SELECTED FOR FISHER RADIO CORP.

COMPONENT CONNECTIONS

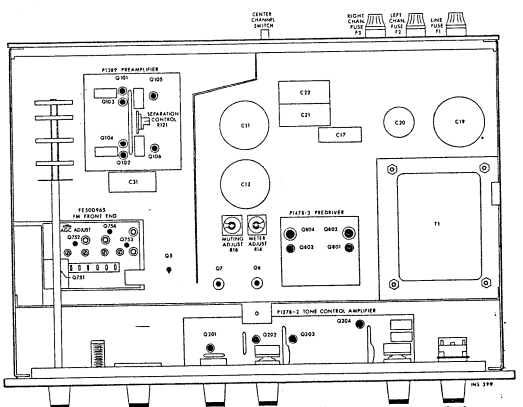


CHASSIS LAYOUT

TOP



BOTTOM



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N 1276-103

PRINTED IN U. S. A.

6C66-06

SERVICE PROCEDURES

TESTING THE POWER AMPLIFIER

CAUTION

DO NOT use uninsulated clips on any connection except to the chassis. Always use miniature, insulated clips when connecting to component leads, socket lugs and terminal strips—it takes only a fraction of a second to destroy a transistor with an accidental short circuit. Make sure metal-cased instruments are not touching the chassis directly or through other instruments and common-ground leads.

WARNING: Disconnect AC power cord while removing or inserting transistors.

- Remove transistors Q1 to Q4, Q801 to Q804 and Q851, Q852 and Q853 (both channels) from their sockets. Label each transistor with its location in the unit.
- Set VOLUME control to its minimum position (extreme counterclockwise).
- Set line voltage through an adjustable transformer to 117 VAC. Plug in AC power cord.
- Connect common lead of DC VTVM to the chassis.
- Measure voltage across filter capacitor C19 or at the B+ terminal of the bridge rectifier; reading should be between 60 and 66 VDC.
- Measure voltage at junction of resistor R50 and zener diode CR2; reading should be between 11.5 and 12.5 VDC.
- Measure voltage at junction of resistor R51 and zener diode CR 3; reading should be between 23 and 25 VDC.
- Insert left channel predriver transistors Q801 and Q803 (Q802, Q804—right channel) in their sockets on the predriver board.
- Measure voltage at connection 8F on predriver board (8K—right channel); adjust Output Adjust Pot. R805 (R806—right channel) for reading of 10 VDC.
- Insert voltage driver transistor Q851 in left channel driver board and measure voltage at the collector. Adjust left channel Center Voltage Adjust Pot. R857 for a collector voltage of 31 VDC.
- Measure voltage from base-to-base socket terminals of power driver transistors Q852, Q853 on left channel driver board. Adjust left channel Output Bias Adjust Pot. R858 for reading of 2.3 VDC.
- Insert left channel power driver transistors Q852, Q853 in their sockets.
- Measure voltage at connection 8H on left channel driver board; reading should be between 28 and 34 VDC.
- Insert left channel power transistors Q3, Q4 (Q1, Q2—right channel).
- Measure voltage across resistors R37 and R39 (R38 and R40—right channel); reading should be between 35 and 50 mV across each resistor.

NOTE: VTVM must have a .25-volt or lower full-scale range to make this reading properly.

- Repeat preceding steps for the right channel.

INTERMODULATION DISTORTION TEST

- Set BALANCE, BASS and TREBLE controls to their center positions. Set MODE/TAPE MONITOR switch to left-hand STEREO position, SELECTOR switch to AUX and SPEAKERS switch to MAIN. Set LOUDNESS CONTOUR, LOW FILTER and HIGH FILTER switches to OFF. Unplug AC power cord.
- Connect a 4-ohm, 50-watt resistor across the LEFT SPEAKERS MAIN terminals. In parallel with the load resistor, connect the input leads of an IM (Inter-Modulation) distortion analyzer and the leads of an AC VTVM capable of reading 0.1 volts with accuracy.
- Connect IM-analyzer generator output to the LEFT AUX LOW input.

NOTE: Speaker common terminals are not at ground potential. IM distortion analyzer ground should be connected to AUX input ground only.

- Connect AC power cord and rotate VOLUME control to its maximum clockwise (full volume) position.
- Increase IM-analyzer generator input to amplifier for 30 watts output (9.0 VAC across 4-ohm load resistor). AFTER ONE FULL MINUTE OF WARM-UP TIME, PROCEED TO NEXT STEP.

NOTE: Warm-up time is very important in obtaining proper readings. The characteristics of transistors change slightly as their internal temperature rises. Once the transistors are warm, the tests should be completed without delay—before they can cool off.

- IM meter reading should be 0.8% or less.
- Repeat preceding steps for the right channel.

NOTE: If any of the preceding instructions are different from those supplied with the IM-analyzer instruction manual, it is best to follow those in the manual. If a load resistor of 50-watt rating is built into the IM analyzer, a separate load resistor is not required. For best results, the IM range switch should be set to give a reading in the center to full-scale portion of the meter scale for greater accuracy.

HARMONIC DISTORTION TEST

Set BALANCE, BASS and TREBLE controls to their center positions. Set MODE/TAPE MONITOR switch to left-hand STEREO position, SELECTOR switch to AUX and SPEAKERS switch to MAIN. Set LOUDNESS CONTOUR, LOW FILTER and HIGH FILTER switches to OFF. Unplug AC power cord.

- Connect a 4-ohm, 50-watt resistor across LEFT SPEAKERS MAIN terminals. In parallel with the load resistor, connect the input leads of a harmonic distortion analyzer and the leads of an AC VTVM capable of reading 0.1 volts with accuracy.
- Connect a low-distortion audio sine wave generator, set for 1000 Hz, to the LEFT CHANNEL AUX LOW jack.
- Connect AC power cord and rotate VOLUME control to its maximum clockwise (full volume) position.
- Increase generator input to set for 45 watts output (13.4 VAC across 4-ohm load resistor). Harmonic distortion meter should read less than 0.8%.
- Repeat preceding steps for right channel.

POWER OUTPUT MEASUREMENT

The power output of this unit is designed to deliver its full-rated power with program material (voice or music) into 4-to 16-ohm loads for indefinite periods.

When a constant 1 kHz (kc) audio tone is used as a signal to measure the continuous RMS power output, the following precautions must be taken:

- Measure the power output of one channel at a time.
- Limit the measurement period to 10 minutes with a load resistance between 4 and 16 ohms. If the power output of both channels must ever be measured simultaneously, use a load of 4 to 8 ohms per channel and limit measurement to a period not longer than 1 minute for a 4-ohm load and not longer than 5 minutes for an 8-ohm load.

BECAUSE ITS PRODUCTS ARE SUBJECT TO CONTINUOUS IMPROVEMENT, FISHER RADIO CORPORATION RESERVES THE RIGHT TO MODIFY ANY DESIGN OR SPECIFICATION WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION.

(2-5)11-1276-15

SERVICE PROCEDURES

DIAL STRINGING

- Turn the tension screw to its mid-position (Figure 1) and remove the end of the tension spring from pulley A mounting bracket (detail view).
- Rotate the tuning capacitor drive drum to its maximum clockwise position. Tie the end of the dial cord to the ear inside the top of the drive drum.
- Run the dial cord through the slot in the drive drum and through the hole in the chassis front and under the switch shaft.
- Wrap two full turns of the dial cord around the tuning shaft.
- Run the dial cord around pulley A (Figure 2). Attach the tension spring to hole 2 in the pulley mounting bracket. Turn the tension screw to its maximum clockwise in position.
- Place the dial cord on pulleys B and C and over pulley D. Position the dial cord in the inner groove of the drive drum.
- Pull the dial cord taut and wrap 2½ turns around the outer groove of the drive drum. Run the dial cord through the slot in the drive drum and under the beveled washer. Tighten the machine screw to hold the dial cord, making certain that the tension screw is in contact with the screw stop.
- Turn the tension screw counterclockwise to hold the dial cord under tension so that the flywheel rotates freely but the dial cord does not slip on the tuning shaft.
- Place the dial cord over and under the tabs on the rear of the diel pointer. Place the dial pointer on the top of the chassis front panel.

REPLACING METER LAMP

- Disconnect AC power cord.
- Remove the screws which hold the top cover to the chassis and lift off the top cover.
- Gently push in on the lamp and turn it counterclockwise to remove. Remove the metal lamp shade and place it on the new lamp in the same position. Place the new lamp in the socket, push in gently and turn it clockwise to lock it in place.
- Replace the top cover on the chassis and secure with the screws removed previously.

REPLACING STEREO BEACON LAMP

- Disconnect AC power cord.
- Remove the screws which hold the top cover to the chassis and lift off the top cover.
- Pry nylon lamp holder from the lamp mount. Unsolder the leads from the lamp holder. Solder leads to rear terminals on the new lamp holder. Place new lamp holder in the mount.
- Replace the top cover on the chassis and secure with the screws removed previously.

REPLACING DIAL LAMPS

- Disconnect AC power cord.
- Gently pull all knobs off the front panel control shafts. Remove hex nuts from the control shafts and lift off the front panel.
- Snap out the defective lamp from the spring clip. Place the new lamp in the socket making certain that the unpointed side of the lamp faces the edge of the dial glass.
- Replace the front panel and secure with the hex nuts removed previously. Replace the knobs on the control shafts.

REPLACING DIAL POINTER LAMP

- Disconnect AC power cord.
- Gently pull all knobs off the front panel control shafts. Remove the hex nuts from the control shafts and lift off the front panel.
- Remove the two foam-cushion strips located at the ends of the dial glass.
- Loosen the screws that hold the retaining clips to the dial glass. Swing the clips aside and lift off the dial glass.
- Remove the lamp wires from the holding clip on the rear of the pointer base and from the two clips on the top of the chassis.
- Slide the dial pointer assembly directly downward to release it from the pointer base. Slide the new dial pointer assembly upward, while pressing downward on the pointer base, until the tab on the pointer mates with the slot in pointer base.
- Twist the lamp wires together and place them under the holding clip on the rear of the pointer base. Do not leave any slack in the wire above the pointer.
- Connect the ends of the two wires to the clips on the top of the chassis.
- Replace the dial glass and position it down and towards the left of the chassis front. Swing the retaining clips back into place and tighten the retaining-clip screws. Replace the foam-cushion strips.
- Replace the front panel and secure with the hex nuts removed previously. Replace the knobs on the control shafts.

CLEANING DIAL GLASS

- Disconnect AC power cord.
- Gently pull all knobs off the front panel control shafts. Remove the hex nuts from the control shafts and lift off the front panel.
- Remove the two foam-cushion strips located at the ends of the dial glass.
- Loosen the screws that hold the retaining clips to the dial glass. Swing the clips aside and lift off the dial glass.
- Remove dust with a dry cloth. If you wish to clean more thoroughly, use a soap-and-water solution only, any stronger agent may damage the markings on the glass.
- Replace the dial glass and position it down and towards the left of the chassis front. Swing the retaining clips back into place and tighten the retaining-clip screws. Replace the foam-cushion strips.
- Replace the front panel and secure with the hex nuts removed previously. Replace the knobs on the control shafts.

CLEANING FRONT PANEL

WARNING: Use only plain lukewarm water and a freshly laundered, soft lint-free cloth to clean the front control panel.

MAIN CHASSIS PARTS DESCRIPTION LIST

CAPACITORS

Symbol	Description	Part No.
C1, 2, 3	Ceramic, .02uF, +80–20%, 100V	C50095-1
C4	Electrolytic, 10uF, 35V	C50483-2
C5, 6	Mylar, .22uF, 10%, 250V	C50B575-2
C7	Ceramic, 2700pF, 10%, 1000V	C50072-17
C8	Ceramic, .02uF, +80–20%, 100V	C50095-1
C9, 10	Ceramic, 120pF, 10%, 1000V	C50072-40
C11, 12	Electrolytic, 1200uF, 80V	C50180-90
C13, 14	Mylar, .33uF, 10%, 250V	C50B575-4
C15	Ceramic, .02uF, +80–20%, 100V	C50095-1
C16	Molded, .01uF, 20%, 600V	C2747
C17	Electrolytic, 200uF, 35V	C50483-7
C18	Ceramic, 330pF, 10%, 1000V	C50072-1
C19	Electrolytic, 2500uF, 80V	C50180-91
C20	Electrolytic, 1000uF, 50V	C50180-80
C21, 22	Electrolytic, 500uF, 35V	C50483-17
C23	–Deleted–	---
C24	Mylar, .015uF, 10%, 100V	C50B574-2
C25, 26, 27, 28	Ceramic, 47pF, 5%, N750, 1000V	C50070-29
C29	Ceramic, 330pF, 10%, 1000V	C50072-1
C30	Electrolytic, 200uF, 15V	C50483-13
C31	Electrolytic, 500uF, 35V	C50483-17
C32	Ceramic, 680pF, 10%, 1000V	C50072-2
C33, 34	Ceramic, 1000pF, 10%, 1000V	C50072-3
C35	Electrolytic, 4uF, 35V	C50483-1
C36	Electrolytic, 100uF, 25V	C50483-6
C37, 38	Electrolytic, 25uF, 35V	C50483-12

RESISTORS

Deposited carbon in ohms, 5% tolerance, ½-watt, unless otherwise noted. K=Kilohms, M=Megohms.

Symbol	Description	Part No.
R1	Composition, 270, 10%	RC20BF271K
R2	82, 1/8W	R12DC823J
R3	100, 1/8W	R12DC101J
R4	1K, 1/8W	R12DC102J
R5	15K, 1/8W	R12DC153J
R6	1K, 1/8W	R12DC102J
R7, 8	27K, 1/8W	R12DC273J
R9, 10	2.7K	R50DC272J
R11	Composition, 220K, 10%	RC20BF224K
R12	–Deleted–	---
R13	Composition, 6.8K, 10%	RC20BF682K
R14	Pot., 1K, 30%, Meter Adjust	R50150-51
R15	Composition, 1BK, 10%	RC20BF183K
R16	Pot., 10K, 30%, Muting Adjust	R50150-53
R17	Composition, 2.7K, 10%	RC20BF272K
R18	Composition, 3.3K, 10%, 1W	RC30BF332K
R19, 20, 21, 22	56K, 1/8W	R12DC563J
R23	100K, 1/8W	R12DC104J
R24A, B	Pot., Dual, 50K, Volume Control	R50160-151
R25, 26	470	R50DC471J
R27, 28	2.7K	R50DC272J
R29, 30	820	R50DC821J
R31, 32	33	R50DC330J
R33, 34	Wirewound, 330, 2W	RW200W331J
R35, 36	Power, 8, 10W	R50B895-1
R37, 38, 39, 40	Wirewound, 0.82, 5W	RL500WR82J
R41, 42	Wirewound, 39, 3W	RL300W390J
R43, 44	Wirewound, 0.15, 10%, 3W	RL300WR15K
R45	Composition, 820K, 10%	RC20BF824K
R46	Composition, 2.7K, 10%, 1W	RC30BF272K
R47	Wirewound, 270, 2W	RW200W271J
R48, 49	Wirewound, 150, 3W	RL300W151J
R50	1.2K	R50DC122J
R51	Composition, 120, 10%	RC20BF121K
R52	100K, 1/8W	R12DC104J
R53, 54	220K	R50DC224J
R55, 56	120K	R50DC124J
R57, 58	68K	R50DC683J
R59, 60, 61, 62	220K	R50DC224J
R63, 64	4.7K	R50DC472J
R65	10K	R50DC103J
R66	Composition, 2.2K, 10%,	RC20BF222K
R67, 68	4.7K	R50DC472J
R69	1.8K	R50DC182J
R70	330	R50DC331J
R71	27K, 1/8W	R12DC273J
R72	Composition, 56, 10%	RC20BF560K
R73, 74, 75, 76	120K, 1/8W	R12DC124J

MISCELLANEOUS

Symbol	Description	Part No.
CR1A, B, C, D	Rectifier, Silicon, 3A120	SR50517
CR2	Diode, Zener Regulator, 12V	ZR50B793-1
CR3	Diode, Zener Regulator, 24V	ZR50921-1
CR4, 5	Stabistor Module, Dual Silicon	SIT 50B843-3
CR6	Diode, Silicon	SID50B851
CR7, 8	Diode, Germanium, IN2326	GET50825-1
F1	Fuse, Line, 3.2A Slo-Blo, 125V	F3319
*	Fuse, Line, 1.5A Slo-Blo, 250V	F3319-12
F2, 3	Fuse, Speakers, 4A, 250V	F3319-4
I1, 2	Lamp, Dial	150441-1
I3	Lamp, Meter	150000-8
I4	Lamp, Stereo Beacon part of	AS50B814-1
I5	Lamp, Dial Pointer part of	AS50451-2
M1	Meter, Tuning, 200uA	M990-124
PC1, 2	Printed Circuit, Equalization	PC50B187-29
Q1, 2, 3, 4	Transistor, TR1009	TR1009
Q5	Transistor, 40245	TR40245-1
Q6, 7	Transistor, 2N2924	TR2N2924
S1	Switch, Rotary, Selector	S1276C116 or S1276C146
S2	Switch, Rotary, Mode/Tape Monitor	S1276C147
S3, 4, 5, 6	Switch, Rocker, Loudness Contour, Muting, Low Filter, High Filter	S50C200-15-1
S7	Switch, Power part of	R50160-151
S8	Switch, Rotary, Speakers	S1276C117
S9	Switch, Slide, Center Channel	S50200-2
T1	Transformer, Power	T1276C115
*	Transformer, Power	TZ1276C153
---	Front End, FM	FE50D965
---	Printed Circuit Board, Tone Control	P1278-2
---	Printed Circuit Board, IF Amplifier	P1381-1
---	Printed Circuit Board, Preamplifier	P1389
---	Printed Circuit Board, Predriver	P1478-3
---	Printed Circuit Board, Power Driver	P1489-3
---	Printed Circuit, MPX Decoder	P1531
---	Dress Panel Assembly	AS1276C141
---	Dipole Assembly	AS50227-1
---	Knob, Volume, Balance, Selector Mode/Tape Monitor	E50B562-1
---	Knob, Dual, Top, Bass, Treble	E50B563
---	Knob, Dual, Bottom, Bass, Treble	E50B564
---	Knob, Speakers	E50B565-1
---	Knob, Tuning	E50B565-2
---	Tuning Capacitor Drive Drum	E50C588
---	Jack, Phones	J50B545
---	Dial Glass	N1276C108

*Used on export model.

If replacement parts are out of stock, locally, they may be obtained directly from the Parts Department of FISHER Radio Corporation. They will be shipped "best way", either prepaid or C.O.D. unless otherwise specified.

For instrument-operation information and technical assistance write Richard Hamilton, Customer Service Department, FISHER Radio Corporation, Long Island City, New York 11101.